

Notice of Allowability

Application No.

10/529,539

Examiner

Charles Chow

Applicant(s)

YOSHIKAWA ET AL.

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/6/2007.
2. ☒ The allowed claim(s) is/are 1-16.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

Detailed Action

1. This office action is for amendment received on 9/6/2007.

Allowable Subject Matter

2. The following is an examiner's statement of reasons for allowance:

Claims 1-16 are allowable over the prior art of record. The prior arts fail to teach the allowable features in the claims, singly, particularly, or in combination, or rendering obviousness.

Applicant has filed the Terminal Disclaimer, 9/6/2007, to overcome the double patenting in the last office action, for the independent claims 12-15, with the binding upon grantee, associated with its successors.

The cited prior arts fail to teach the allowable features in below, together with their associated features in the independent claims 1, 12-15, for the two point modulations of the broadband modulation phase locked loop PLL comprising:

a voltage controlled oscillator, a frequency divider, a phase comparator, a loop filter;
a first modulation input portion for inputting a first modulation signal to a first position of the PLL based on the input modulation data;

a second modulation input portion for inputting a second modulation signal at a second position different from first position on the basis of the modulation data,

wherein the first modulation signal input to the first position is added with the second modulation signal at the second position, and

any one of the first and second modulation input portions inverts the phase of the modulation data and inputs the modulation to the PLL at the time of a modulation timing adjustment to adjust the modulation timing of the first modulation signal and the second modulation signal.

Art Unit: 2618

The dependent claims are also allowable due to their dependency upon their independent claim and comprising additional claimed features associated to the features of the independent claim.

The closest prior art, **Johnson et al. [EP 0,408,238 A2]**, a wide band modulation frequency synthesizer [Fig. 1, col. 1, lines 3-9], the inputting of R data from 21 to delay Tg 22; the inputting of R data from 21 to delay Tg 24, but fails to teach further limitation features of the any one of the first and second modulation input portions inverts the phase of the modulation data, and the inputs the modulation signal to the PLL portion at the time of a modulation timing adjustment to adjust the modulation timing of the first modulation signal and the second modulation signal.

Heck [US 4,755,774] teaches the inverter 112 inverts one of the modulation input from 22 to modulator 14', second modulation signal from 22 via 25' to vco 18, of the two point modulation [Fig. 8, col. 8, line 60 to col. 9, line 27], but fails to teach the other allowable features missed by Johnson above.

Wynn [US 4,447,792] teaches the modulation signal inputted to delay 16 & to reference oscillator 10 [col. 3, lines 1-23, col. 1, lines 44-63, to reduce the distortion by adjusting of the delay], but fails to teach the first modulation of the first position being properly added to the second modulation signal at the second position.

Other prior arts in below were also considered, but they fail to teach the above allowable features,

Opsahl et al. [US 5,903,194] teaches the frequency synthesizer has modulation input including a delay 130 which is subtracted from its input 138 via selection in multiplex 134, 70 [Fig. 5, Fig. 6 & its related description in the specification].

Flugstad et al. [US 4,810,977] teaches the PLL with adjustable delay 31 [Fig. 2 & its related description in the specification].

Gossmann et al. [US 2001/0036,240 A1] teaches the phase delay 10/22, in two point modulation [Fig. 2 & its related description in the specification].

Chang [US 6,160,456] teaches the PLL with first delay array 271 [Figure in cover page & its related description in the specification].

Groe [US 7,061,341 B1] teaches the two point modulation [Figure in cover page & its related description in the specification].

Hietala [US 5,166,642] teaches the delay arrangement for the multiple accumulators for a synthesizer [Figure in cover page & its related description in the specification].

Trichet et al. [US 6,211,747 B1] teaches the two point modulation in a frequency synthesizer including detecting vco input voltage [Figure in cover page & its related description in the specification].

Other references are also considered. They are: **Hirano [US 2006/0202,774 A1]**, **Nishimura et al. [US 2002/0105,389 A1]**, **Yoshikawa et al. [US 2005/0232,385 A1]**, **Matsuyoshi et al. [US 7,046,972 B2]**, **Grewing et al. [US 2005/0046,488 A1]**, **Grewing et al. [US 2004/0192,231 A1]**, **Hammes et al. [US 2004/0036,539 A1]**, **Nienaber [US 4,611,230]**, **Salvi [US 5,557,244]**, **Filiol et al. [US 6,515,553 B1]**, **Dent [US 5,983,077]**, **Linebarger et al. [US 6,141,394]**.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Art Unit: 2618

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow C.C.

September 14, 2007.


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